

DaimlerChrysler AG

Patent Claims

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1. Electrical generator for an internal combustion engine which has a DC voltage network and an alternating current machine, which is arranged externally on the internal combustion engine, as well  
10 as a rectifier (2) which electrically connects the DC voltage network and the alternating current machine, with the rectifier (2) having at least two heat sinks (4.1), which each have at least one associated diode (3.1) and are in the form of a negative pole or  
15 positive pole,  
characterized  
in that at least the heat sink (4.1) of the rectifier (2) is arranged physically separately from the alternating current machine, with the heat sink (4.1)  
20 having an associated fan (6).

2. Apparatus according to Claim 1,  
characterized  
in that the rectifier (2) has an associated regulator  
25 (2.1), with the regulator (2.1) being arranged between the heat sink (4.1) and the alternating current machine, on a frame part (13) of the internal combustion engine.

30 3. Apparatus according to Claim 1 or 2,  
characterized  
in that the fan (6), which is in the form of a cooler fan, has a rotation speed which is dependent on the DC voltage network voltage, with the cooler fan (6)  
35 generating an increase in rotation speed if the DC voltage network voltage drops below a critical value,  $U_{min}$ .

4. Apparatus according to one of the preceding claims,

characterized

5 in that the heat sink (4.1) is arranged via at least one spacing sleeve on a rectifier housing (7) which is formed from plastic, with the spacing sleeve being in the form of a voltage tap for the DC voltage network and being connected via at least one plastic screw (9.1) to the rectifier housing (7).

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5. Apparatus according to one of the preceding claims,

characterized

15 in that the rectifier housing (7) is arranged in the flow direction of the cooling air in the area of a cooler fan (6), with at least one first face (7.1) which is associated with the cooler fan (6) being open, and a second, opposite face (7.2) having at least two or more ventilation openings (7.3) for cooling air.

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6. Apparatus according to one of the preceding claims,

characterized

25 in that a cable duct (8) is provided between the rectifier (2) and/or the regulator (2.1) and/or the alternating current machine, with the cable duct (8) being at least partially in the form of an electromagnetic screen.

30 7. Apparatus according to one of the preceding claims,

characterized

35 in that the heat sink (4.1) has two or more cooling ribs (5.1) which are connected to one another and/or are attached to a rectifier housing (7) of the rectifier (2) on at least one side, and are open downwards in the direction of the vertical.

8. Apparatus according to one of the preceding claims,

characterized

in that the rectifier (2) has a power of between 2.5 kW  
5 and 3.6 kW and is formed from at least 12 diodes (3.1, 3.2), with at least two diodes (3.1, 3.2) in each case being connected in parallel.

9. Apparatus according to one of the preceding  
10 claims,

characterized

in that the alternating current machine is attached together with a further unit to the internal combustion engine, and has a common drive with this unit.

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10. Apparatus according to one of the preceding claims,

characterized

in that the heat sink (4.1), which holds the diodes  
20 (3.1, 3.2), of the rectifier (2) is arranged physically separately from the alternating current machine upstream and/or downstream of the fan (6) with reference to the flow direction of the cooling air, with the rectifier housing (7) which holds the heat  
25 sink (4.1) having two or more ventilation openings (7.3), and the regulator (2.1) for the rectifier (2) being arranged physically separately between the rectifier housing (7) and the alternating current machine.